



# ESS-250TP series

Lift Door Steam Sterilizer



**STERILIZATION**



# ESS-250TP

## Lift door steam sterilizer

### Main performance features

#### 1. Door and seal

1) The door can open and close automatically by sliding and lifting, and the sealing ring driven by inflation pressure can realize automatic sealing without manual opening.

2) Double door channel type, with pressure safety interlock, liquid program with temperature door safety interlock, double door interlock to ensure the effective isolation of inspection packaging and sterilization area and sterile storage area.

\*High quality and high tear resistant silicone rubber material round hollow door seal ring, surface treatment of Perrin coating, wear-resistant and smooth, with better sealing effect and longer service life, life up to 1500 cycles.

#### 2. Pressure vessel (main body and door):

(1) \* horizontal sterilization chamber, rectangular section, European (Getinge) ring stiffener jacket structure, high strength, fatigue load resistance.

(2) \* four corner arc of the inner chamber, no dead angle, and a certain inclination of the bottom of the inner chamber, so as to ensure the discharge of condensation water in the inner chamber.

(3) \* the inner liner and door plate are made of 316L stainless steel, and the jacket is made of s30408 stainless steel. The sealing groove is directly welded on the annular jacket at both ends (Getinge structure).

(4) The longitudinal seam of the inner tank adopts the plasma automatic welding process, the jacketed robot automatic welding, and the vibration aging stress relief treatment is adopted after welding to eliminate the welding stress, which effectively improves the structural stability and service performance of the main body and the door assembly.

(5) The inner liner and door surface are polished to 0.4.

#### 3. Control system:

(1) Imported Siemens PLC and color touch screen, automatic program control of the whole process, automatic display of operation process status, temperature, pressure, time parameters, and automatic display of jacket and inner chamber temperature, pressure operation curve.

(2) There are sterilization procedures such as sterile clothing, tools, rubber, liquid and custom procedures, BD test, vacuum leak test and other test procedures, as well as manual control procedures, drying and other auxiliary procedures. The user-defined program can change the working parameters according to the actual situation.

(1) The advantages of pulsating vacuum (three times of negative pressure pulsation, one time of cross pressure pulsation and one to three times of positive pressure pulsation) compared with the traditional three times of cross pressure pulsation are as follows:

1) It has the advantages of 99.99% air volume in the exhaust room and fast load temperature penetration;

2) The pressure alternating load is reduced and the fatigue life of the equipment is increased;

3) Low load humidification and good drying effect in pulse heating stage

(1) The process data can be printed in real time by the built-in micro pin printer, which is inconvenient to keep for a long time due to the printing records of the thermal printer. Print out the temperature, pressure, sterilization articles, sterilization time and operators of the sterilizer.

(2) Intelligent maintenance system: (optional) remote monitoring and maintenance module, which can realize remote monitoring and remote software upgrade of equipment operation. Automatically count the usage times of components and detect the status of components, timely alert maintenance information to users, including door rubber ring replacement prompt, air filter replacement prompt, door lifting mechanism lubrication maintenance prompt, filter cleaning maintenance prompt, etc.

#### 3. Pipeline system:

(1) Sanitary pipeline, 316L stainless steel is connected to the inner chamber, with clamps, and all welds are welded by automatic pipe welding machine;

(2) The trouble free operation life of pneumatic valve is more than 4 million times;

(3) Direct coupled water ring vacuum pump has the advantages of fast pumping speed, low noise and long service life.

(4) Heat preservation of high temperature pipeline, energy saving and safety, red color.

(5) Water saving and noise reduction system, equipped with water tank, can reduce the circulating water consumption of vacuum pump by 30%, and reduce the noise of vacuum pump.

(6) Automatic drainage device, jacket and inner chamber are equipped with automatic control drainage device, automatic program control, automatic detection of jacket and inner chamber temperature and pressure, automatic drainage, to ensure steam saturation.

3. Air filter: the filtering accuracy is  $\leq 0.22 \mu\text{m}$ , and the sterilization rate reaches 99.97%.

4. The outer decoration cover is made of 304 stainless steel with mirror sandblasting and fingerprint resistance, and the surface is easy to clean.

#### 5. Safety device and alarm system

##### 1) Door safety interlock:

① With pressure safety interlock device, when the door is not locked under normal working conditions, the steam cannot enter the inner chamber, and the program cannot be started; the door can only be opened when the inner chamber pressure is fully released.

② The liquid program has a temperature door safety interlock. When sterilizing liquid, the door can only be opened when the indoor liquid temperature drops to the standard boiling point of liquid - 20 °C, so as to avoid the explosion of liquid container caused by the rapid cooling of high temperature liquid.

③ It has double door interlock function to ensure the effective isolation between inspection packaging and sterilization area and sterile storage area.

④ The door with gasket able or pressure driven gasket shall meet the requirements of 7.102 in gb4793.4. The door sealed by gasket able or pressure driven gasket in the sterilizer shall be equipped with pressure monitoring device. When the sealing pressure of the door is reduced to less than the minimum pressure specified by the manufacturer, it can be ensured that: a) the operation cycle is stopped; b) There is a visual or audible alarm signal to indicate the failure; c) the door remains closed; d) prevent steam, water or air from entering the pressure chamber;

2) Overpressure automatic protection and alarm function: the pressure control of mezzanine, inner chamber and evaporator (if any) adopts imported brand analog pressure transmitter intelligent control, instead of manual adjustable mechanical pressure switch, real-time detection and collection of pressure data, overpressure automatic protection and alarm;

3) The jacket and the sterilization room are equipped with safety valves. If the safety opening pressure is exceeded, the safety valve will automatically open for pressure relief;

4) Ultra temperature and low temperature alarm function: the inner chamber temperature control adopts class a precision PT100, real-time temperature data collection, automatic protection and alarm when the temperature exceeds the set temperature, automatic protection and alarm when the temperature is lower than the set sterilization temperature;

5) Low pressure alarm of compressed air: equipped with a pressure switch to detect the pressure of compressed air. If the pressure is lower than 0.4MPa, an automatic alarm will be given; with door motor and vacuum pump motor overload protection alarm device.



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## The main technical parameters

Technical parameters	Design index
Vessel design life	Internal tank s30408, jacket Q245R life 10 years / 20000 sterilization cycles
	Inner liner 316L, jacket s30408 life 15 years / 30000 sterilization cycles
Design pressure of inner chamber	-0.1~0.3MPa
Jacket design pressure	0.3MPa
Design temperature	150°C
Maximum operating temperature	138°C
Maximum working pressure	0.25MPa
Opening pressure of inner chamber safety valve	0.28MPa
Opening pressure of jacketed safety valve	0.28MPa
Inner chamber hydrostatic test pressure	0.39MPa
Jacket test pressure	0.52MPa
Temperature display accuracy	0.1°C
Pressure display accuracy	0.1KPa
Sterilization temperature control accuracy	±0.2 °C
Temperature uniformity	±1°C
Amplitude and times of vacuum pulsation	Amplitude - 80 ~ 0kpa, times 1 ~ 99
Number of pulsations	Amplitude - 80 ~ 80kPa, times 1
Times of positive pressure fluctuation	1~3
Ultimate vacuum	-97 KPa
Vacuum leakage rate	≤0.13KPa/min
surface temperature	The external surface temperature shall not exceed 25 °C of the ambient temperature
Dryness	The weight gain of fabrics after sterilization and drying shall not exceed 0.6%, and that of utensils, tools and instruments after drying shall not exceed 0.1%.

## Utilities

Content	Technical Parameters	Remark
Single phase voltage supply	220±10% V, 50 Hz	
Three phase voltage supply	380±10% V, 50 Hz 2KW	
Pure steam	0.25 MPa ~0.35 MPa	Inner chamber
Industrial steam	0.3 MPa ~0.5 MPa	Jacket
Water softening	0.15 MPa ~0.3 MPa	Vacuum pump and cooler water supply
Compressed air	0.4 MPa ~0.7 MPa	



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## Specification and models

Model	Tank size		Volume(L)	Boundary dimension	Weight Kg	Steam consumption Kg/C	Power
	Width / height	Depth		L x W x H			
ESS-250TP/150	450*450	750	150	1150*1050*1750	500	16	380V,50HZ 2KW
ESS-250TP/250	550X550	850	250	1150×1350×1800	850	18	380V,50HZ 2KW
ESS-250TP/360	610X610	1000	360	1300×1350×2000	950	22	380V,50HZ 2KW
ESS-250TP/675	672X672	1500	675	1800×1116×2120	1200	36	380V,50HZ 2KW

ESS-250TP/150, 250, 360: (7 programs) INSTRUMENT, TEXTILE, RUBBER, FLUID, BD test, SELF-DEFINE, Custom  
 ESS-250TP/675 : (11 programs) Fabric, Liquid, BD, Instrument, Prion, PCD, Rubber, Lumen, Implant, Custom 1, Custom 2

## Product configuration table

Content	Technical description
Subject	316L stainless steel for inner shell; s30408 for stiffener; class I pressure vessel
Door drive motor	Single phase AC power supply, high temperature resistant, with over current and overload protection, stable operation.
Travel switch	Reliable operation, high temperature resistance and long service life
Door seal valve	
Piping system	Internal polished 316L sanitary pipeline is used for connecting with the inner chamber, and 304 pipeline is used for the rest.
Angle seat pneumatic valve	Powerful on-off valve, reliable action $\geq 4$ million times, remote compressed gas control. Stainless steel seat, and the valve connected with the inner chamber is 316L welded angle seat valve.
Pneumatic valve guide	Balanced operation, no water leakage, high reliability and low noise
Vacuum pump	
Cooler	It is used for vacuum exhaust cooling, improving the speed of vacuum extraction, ensuring the vacuum degree, improving the operation life of vacuum pump, and low drainage temperature.
Pressure relief valve	The pressure is stable and reliable.
Safety valve	Material 304
Air filter	The efficiency of 0.22 $\mu$ m ultra-fine filter is 100%.
Sterilization vehicle	All stainless steel support structure, easy to push and pull
Van	Stainless steel support structure, strong and durable, easy to push and pull.
Decorative mask	Stainless steel wire drawing plate, frosted and fingerprint resistant, bright and easy to clean
Insulation cover	It is made of embossed aluminum plate with good heat preservation effect.
Control system	PLC control, real-time detection, display and control equipment technology.
PLC	Powerful function, advanced performance and high reliability.
Sterilization program software	A variety of working procedures, program modular management.
Touch screen	Display process parameters and operation data, easy to operate, powerful function.
Recorder	Multi channel detection, recording sterilization related pressure, temperature curve, time and other information, clear record, long service life.
Micro printer	Print the main process parameters, pressure, temperature, time and other parameters related to sterilization, with clear records and long service life.
Pressure transmitter	Good precision, high reliability and stable output.
Temperature sensor	Good stability, high speed, class a accuracy and small measurement error.



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